

A Root's Favorite Route

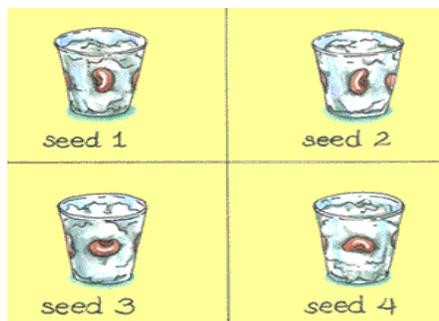
A brand new root that's just popped out of the seed already can do some pretty special moves. Try this activity to see that even a very young root already knows where it's heading.

Materials:

- 4 bean seeds
- Paper towels
- Clear plastic cup
- Water

Procedures:

1. Moisten 5 or 6 paper towels. Crumple them up and push them into a clear plastic cup so that they fill the cup completely.
2. Place four bean seeds between the paper towels and the cup so that the little indented part of each seed is facing in a different direction as shown.



3. Pour water on the paper towels so that they are totally wet and some water ends up in the bottom of the cup.
4. Place plastic wrap loosely over the cup to slow down the evaporation of the moisture from the paper towels.
5. Place the cup in a dark area. Check the seeds each day for about a week. If the paper towel seems to be getting dry, carefully add some water and reseal. Continue to observe the bag until a root sprouts from each seed. What do you notice about the direction in which the root from each seed grows?



Think about this ...

In what direction do you think the root would grow if you turned the cup upside down each day? You could try it and see!

Where's the Chemistry?

The tip of the root has special structures and chemicals that sense and respond to gravity. As gravity pulls on the root, the root cells grow in a way that eventually points the root toward the direction of the gravitational pull.



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The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

